

REMARKS

Claim 1 has been canceled without prejudice or disclaimer. Claims 2-8 have been amended. Accordingly, claims 2-8 are currently pending in the application.

PRIORITY

Applicants appreciate the Examiner's acknowledgement of the claim for priority and safe receipt of the certified priority document.

PTO-1449 FORM

On January 10, 2001, Applicants filed an Information Disclosure Statement. However, the Examiner has not returned an initialed copy of the PTO-1449 Form. Accordingly, it is requested that the Examiner initial and return a copy of enclosed PTO-1449 Form to indicate that the documents have been considered.

35 U.S.C. §103

Claims 1-8 stand rejected under 35 U.S.C. §103 as being unpatentable over Ogata et al in view of Dmitriev et al. This rejection is traversed as follows.

The present invention is directed to an ion implantation equipment and method in which the ion implantation equipment includes an ion source, a mask separation means, a scan means, and an angle correction means, as recited in claim 2, for example. The angle correction means corrects a scanning angle in a scanning surface of the ion beam by adding the magnetic field changing in magnetic field strength over time to the ion beam scanned by the scanning means so as to correctly irradiate the ion beam into an implantation target. This way, the fluctuation of the scanning angle is suppressed and active magnetic field deflection is performed.

None of the cited references disclose these features of the present invention. For example, Ogata et al disclose an ion implantation apparatus including a scanner system for scanning an ion beam and irradiating the ion beam onto a substrate (see Abstract). The scanning of the electron beam is performed in a direction that is horizontal to a page space by varying the electrical potential of first deflection

electro-magnets. At the same time, scanning of the electron beam in a direction vertical to a page space is performed by varying the magnetic field generated by second deflection electro-magnets. In other words, Ogata et al merely disclose two-dimensional scanning by using two deflectors.

Clearly, Ogata et al fail to disclose that the fluctuation of the scanning angle to a sample generated in one deflector is suppressed by correction in another deflector. The deficiencies in Ogata et al are not overcome by resort to Dmitriev et al. Dmitriev et al disclose an apparatus for electron beam irradiation of objects having a deflecting electromagnet 8 with a frame-type magnetic circuit to direct a beam 7 onto an irradiated object 6 substantially at an angle of 90° (see Abstract). A correcting electromagnet 31 is located along the path of the electrons next to a sweeping electromagnet 30 for deflecting an electron beam. A sweep current generator 33 is connected to the sweeping electromagnet and the correcting electromagnet 31 is connected to a direct current source 38 (see column 5, lines 1-16).

The Examiner maintains that the correcting electromagnet 31 of Dmitriev et al corresponds to the angle correction means of the present invention. However, since direct current is supplied to this correcting electromagnet 31, a fixed magnetic

field is formed by the electromagnet 31. This conventional feature is discussed in the background section of the present specification.

Therefore, the attempted combination of Ogata et al and Dmitriev et al fails to raise a *prima facie* case of unpatentability. As mentioned above, Ogata et al do not disclose scanning and correcting of a scanning angle as recited in the pending claims. Also, Dmitriev et al merely disclose deflection by a fixed magnetic field.

Deficiencies in the primary references to Ogata et al and Dmitriev et al are not overcome by resort to the remaining references. Namely, Olson merely discloses deflection similar to that taught by Dmitriev et al. White et al merely disclose scanning of a beam. Benveniste merely discloses beam deflection by constant potential electrodes. Aitken discloses beam scanning using an electric field. As such, it is submitted that the pending claims patentably define the present invention over the cited art.

CONCLUSION

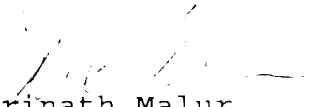
In view of the foregoing amendments and remarks, Applicants contend that the above-identified application is

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now in condition for allowance. Accordingly, reconsideration and reexamination are respectfully requested.

Respectfully submitted,


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